

*CLAIM AMENDMENTS*

1 – 12 (Canceled)

13. (Currently Amended) A method for the production of metal coated steel products, comprising the steps of:

providing a steel product with a ~~metallic coating~~, coating;

~~adding~~ diffusing an additional metallic element ~~to~~ into said metallic coating to form an intermetallic compound; ~~followed by a step of~~

~~subjecting said product to a thermal treatment;~~

~~characterized in that:~~

~~prior to the addition of said additional element, wherein said steel product is subjected to a plasma treatment, treatment prior to the addition of said additional metallic element~~ for cleaning and activating the surface of said ~~coating~~, metallic coating;

~~said additional~~ wherein said additional metallic element is added through a physical vapour deposition — technique, technique; and

~~said thermal~~ wherein thermal treatment is applied by directing high energy infra red radiation towards the outer surface of said metallic coating, the thermal treatment heating the steel product from outside to diffuse the additional metallic element into the metallic coating without affecting an interface between the steel substrate and the metallic coating.

14. (Previously Presented) The method according to claim 13, wherein said metallic coating is chosen from the group consisting of: a Zn-coating, an Al-coating, a Zn-Al coating.

15. (Previously Presented) The method according to claim 13, wherein said additional metallic element is Mg, and wherein said Mg is added through sputtering or evaporation under low pressure.

16. (Previously Presented) The method according to claim 13, wherein said plasma treatment is a Dielectric Barrier Discharge (DBD) plasma treatment, taking place at a pressure of between 0.1 bar and 1 bar, under an atmosphere consisting of N<sub>2</sub> or of a mixture of N<sub>2</sub> and H<sub>2</sub>.

17. (Previously Presented) The method according to claim 13, wherein said plasma treatment takes place under vacuum.

18. (Previously Presented) The method according to claim 13, wherein said thermal treatment is given under an inert atmosphere.

19. (Withdrawn) The method according to claim 13, wherein said thermal treatment is given under air.

20. (Previously Presented) The method according to claim 13, wherein said product is a steel sheet.

21. (Withdrawn) The method according to claim 20, wherein said infra red radiation is directed towards one side of said sheet, during a time interval between 5 and 10s.

22. (Previously Presented) The method according to claim 20, wherein said infra red radiation is directed towards both sides of said sheet, during a time interval between 3 and 8s.

23. (Previously Presented) The method according to claim 13, wherein the energy density of said infra red radiation is at least  $400\text{kW/m}^2$ .

24. (Withdrawn) Apparatus for performing the method of claim 13, comprising:

a means for performing a plasma treatment on a metal coated product,  
a means for adding an additional element to said coating by using a physical vapour deposition technique,  
a means for directing high energy infra red radiation towards the outer surface of said coating, after adding said additional element.

25. (Previously Presented) The method according to claim 13, wherein the additional metallic element is a reflectivity reducing agent, reducing a reflectivity of the metallic coating.

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26. (Previously Presented) The method according to claim 13, wherein the infra red radiation thermal treatment is applied before application of any organic coating on the metal coated surface.

27. (Previously Presented) The method of claim 13, further comprising an apparatus for accomplishing the method, the apparatus including:

- a means for performing a plasma treatment on a metal coated product;
- a means for adding an additional element to said coating by using a physical vapour deposition technique; and
- a means for directing high energy infra red radiation towards the outer surface of said coating, after adding said additional element.